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PLANS

TIMBER MANAGEMENT PLAN

ST. JOE WORKING CIRCLE

ST. JOE NATIONAL FOREST

IDAHO

REGION ONE

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TIMBER MANAGEMENT PLAN  
ST. JOE WORKING CIRCLE  
ST. JOE NATIONAL FOREST  
REGION ONE, IDAHO  
1961

A. TITLE AND APPROVAL SHEET

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Forester (Timber Mgt.)

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/s/ W. H. Johnson 11/15/61  
Acting Regional Forester

/s/ Edward P. Cliff 12/20/61  
/s/ DJM Acting Chief

Reviewed by:

Regional Office

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Recreation, Lands &  
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Engineering /s/ John A. Adams 11/14/61

Fire Control /s/ MET 11/14/61

State and Private /s/ EHJ 11/13/61

Research

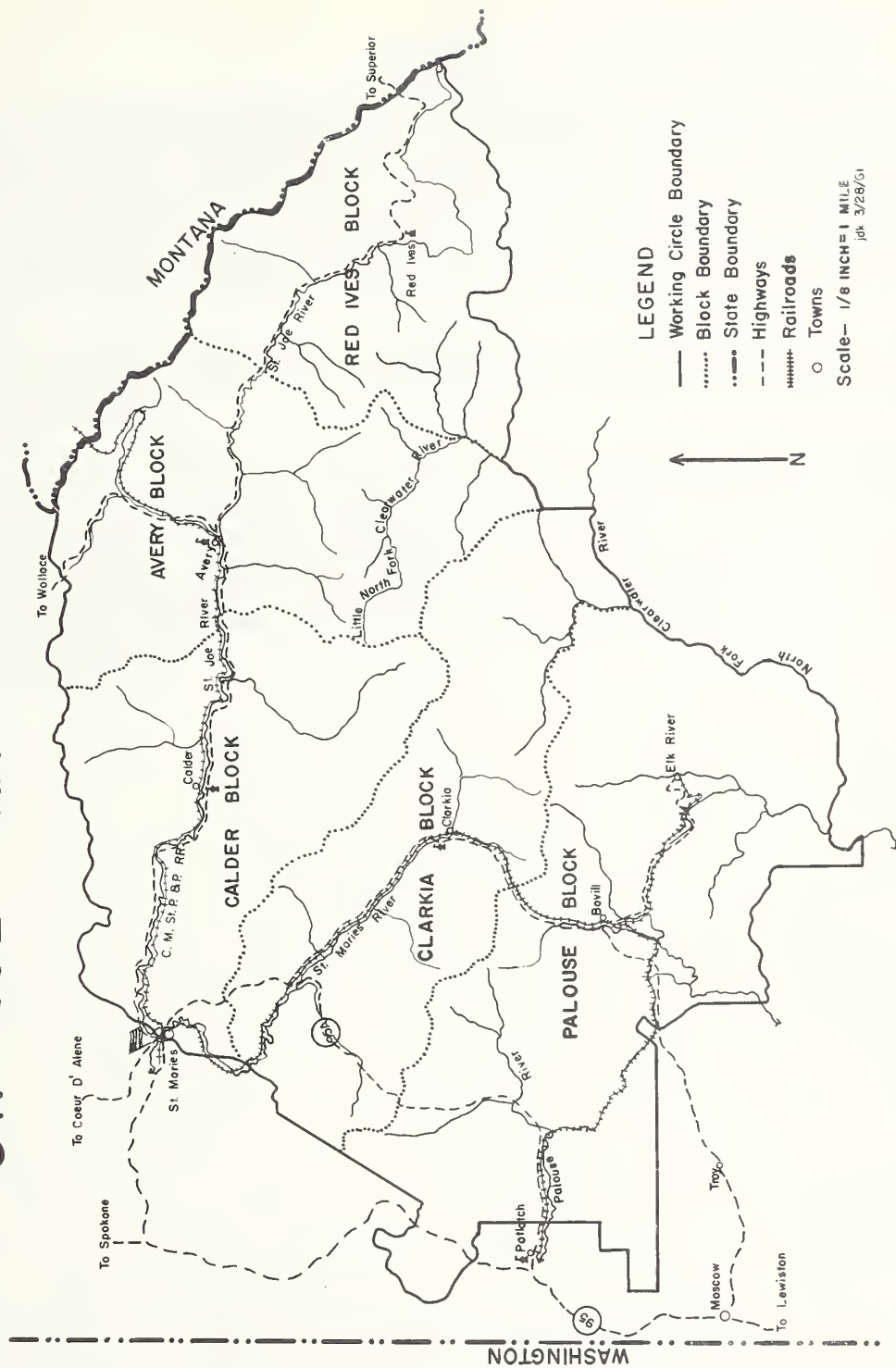
Forest Disease \_\_\_\_\_

Forest Insect /s/ DEP 10/26/61

Forest Management /s/ CAW 10/25/61



# ST. JOE WORKING CIRCLE ST. JOE NATIONAL FOREST





## FOREWORD

Congress requires that the national forests shall be managed to furnish a continuous supply of timber for the use and necessities of citizens of the United States. Forest Service policy requires the application of the principles of multiple use and sustained yield management to national-forest lands as set forth in the Multiple Use-Sustained Yield Act of June 12, 1960 and related laws. This plan applies these policies and objectives to the management of timber resources in the St. Joe Working Circle.

Although this plan is primarily concerned with nonreserved national-forest lands, certain basic data for intermingled forest lands in other ownership groups are included.

Basic area and volume data for the plan were collected during 1959 and 1960 and compiled under the supervision of James C. Kline. The plan was written by District Rangers Kenneth I. Young, Clarence S. Sinclair, Robert S. Mathison, Vernon J. Joyer, and Thomas L. Finch under the general supervision of Timber Staffman Robert W. Damon and Forest Supervisor Ray L. Hilding. Technical supervision was provided by the Regional Office, Division of Timber Management.





# C. SUMMARY OF PLAN

## LAND AND TIMBER OWNERSHIP

Ownership	Non-forest	Forest Land			Sawtimber Volumes					Other
		Noncom.	Com'l	Total	W	P	L-D	Other	Total	Prod.
		Area in Acres			MMBF (Scribner)					
N. Forest	369	48,211	815,118	863,329	965	110	1,826	2,551	5,452	4,434
State	497	1,621	78,402	80,023	110	14	221	349	694	490
Other Pub.	23	3,482	45,820	49,302	38	6	105	156	305	252
For. Ind.	552	5,972	306,911	312,883	585	59	1,065	1,711	3,421	1,903
Other Priv	12,819	5,465	87,736	93,201	78	19	228	317	642	497
TOTAL	14,260	64,751	1,333,987	1,398,738	1,176	209	3,445	5,084	10,514	7,576

## NET GROWTH - NONRESERVED NATIONAL FOREST

Growth Expression	Sawtimber		Other Products	
	/ac/yr	Total	/ac/yr	Total
	BF	MMBF	Cords	M Cds.
Periodic Annual Growth	169	112	0.22	149
MAI on Present Stands	113	92	0.09	73
Sustained Yield Capacity	285	232	0.25	203
Satisfactory MAI (70% normal)	200	162	0.17	141

## ANNUAL ALLOWABLE CUT - NATIONAL FOREST LAND

Kind of Cutting	Annual Cutting Area	Sawtimber Volume by Forest Types						Other Products
		W-P	L-D	GF-H-AF	S-C	LP	Total	
	Acres	MMBF (Scribner)						M Cords
Harv. Cuttings <sup>1/</sup>	7,400	33.0	25.0	26.0	6.0	3.0	93.0	50
Intermed. Cuts <sup>2/</sup>	7,000	1.0	2.5	1.0	-	2.5	7.0	14

<sup>1/</sup> Regulation of allowable harvest cut is by area but with coordinating volume control.

<sup>2/</sup> Allowable area of intermediate cuttings is an objective and is in addition to the allowable harvest cut.

REVISION DATE: 1971



## D. MANAGEMENT PLAN

### 1. LAND DESCRIPTION

#### a. Location

The St. Joe Working Circle is located in the panhandle of Idaho, primarily in Shoshone County, with portions extending into Benewah, Clearwater, and Latah Counties. St. Maries, Idaho, lies on the northwest edge of the working circle and Moscow, Idaho, is situated six miles outside the working circle to the southwest. Gross areas of national-forest land by counties are as follows:

<u>COUNTY</u>	<u>NATIONAL FOREST ACREAGE</u>	<u>PERCENT OF TOTAL</u>
Shoshone	659,663	76.4
Benewah	52,067	6.0
Clearwater	46,547	5.4
Latah	105,121	12.2
TOTAL	<u>863,698</u>	<u>100.0</u>

#### b. Boundaries

The boundary of the working circle coincides with the boundary of the St. Joe National Forest. The northern and eastern portion of the working circle encompasses the St. Joe River drainage. The southern boundary follows the main divide between the Little North Fork and the North Fork of the Clearwater River, and the North Fork of the Clearwater River to a point below Elk Creek. It then generally follows surveyed land lines to a point approximately five miles north of Moscow, Idaho. The west boundary of the working circle coincides quite closely with the old Coeur d'Alene Indian Reservation boundary.

#### c. Subdivisions

(1) Blocks - The St. Joe Working Circle is divided into five blocks which coincide with present ranger district boundaries. (See map of working circle.)

The following table shows national forest areas by blocks:

## NATIONAL FOREST AREAS BY BLOCKS

Block and District Name	Block Number	Number of Compartments	Gross Area (N.F.)	Percent of Total Area
Red Ives	1	34	232,746	27.0
Avery	2	46	272,443	31.5
Calder	3	30	113,044	13.1
Clarkia	4	37	98,415	11.4
Palouse	5	41	147,050	17.0
TOTALS.		188	863,698	100.0

(2) Compartments - The working circle contains 188 compartments ranging in size from 1,548 acres to 70,185 acres (see map of working circle). Several compartments are quite large, but they contain very little national-forest land. National forest ownership ranges from less than five percent in some of the largest compartments to 100 percent in the smaller ones.

Compartment boundaries, in most cases, are the same as were used in compiling the 1950 management plans. In almost all cases the compartment boundaries follow geographical features and enclose drainages that will lend themselves to unit management.

### d. Relation To Other Working Circles

The St. Joe Working Circle is rather unique in that a major portion of the timber produced on the forest is manufactured at mills located outside the working circle. Logs from this area have been transported to Coeur d'Alene, Post Falls, Harrison, Lewiston, Kendrick, and Orofino, Idaho; St. Regis and Superior, Montana; Spokane, Cusick, and Newport, Washington. This drain to outside areas of manufacture can be expected to continue and increase as long as milling capacities and lumber demands exceed the local available timber supplies in those areas.

In and immediately adjacent to the forest are approximately 20 small sawmills, two medium-sized sawmills, and one large sawmill, plus several cedar shake mills. Most of these mills depend, in part, upon timber from the working circle for their production.

Topographic features between drainages that once were important in determining the direction of the flow of logs are slowly being changed with the building of better roads and the use of large powerful trucks. Because of this improved efficiency and speed of log transportation, the competitive zones of established industry are widening and overlapping.



## 2. SUMMARY OF RESULTS UNDER PREVIOUS PLANS

Two previous plans have been prepared for the forest. In 1941 a single plan was prepared for the entire forest, but it was never approved. In 1950 a second planning effort divided the forest into six working circles with a plan for each. All but one of the working circle plans were approved by the Chief's office. The working circles and their dates of approval were:

Upper St. Joe	May 4, 1951
Fishhook	Not approved
Lower St. Joe	January 26, 1953
St. Maries	March 2, 1952
Potlatch	March 21, 1953
Little North Fork Clearwater	March 4, 1953

The annual allowable cut established by these six plans was as follows:

Working Circle	W-P	Mixed	Total Sawtimber	Poles	Pulpwood	Total Volume
Upper St. Joe	7.8	2.7	10.5	.1	2.0	12.6
Fishhook	6.7	6.3	13.0	.9	5.7	19.6
Lower St. Joe	1.0	3.2	4.2	.2	4.9	9.3
St. Maries	.9	4.7	5.6	.1	2.1	7.8
Potlatch	2.3	8.5	10.8	.1	3.2	14.1
L.N.F. Clearwater	2.4	5.0	7.4	.1	1.9	9.4
TOTAL	21.1	30.4	51.5	1.5	19.8	72.8

Average cut of all products for the period 1951-1960 was 42.95 MMBF per year. An accelerated cutting program was necessary in the Fishhook and Lower St. Joe Working Circles during the spruce bark beetle emergency program. This epidemic resulted in an overcut for these two working circles. All other working circles undercut the allowable volume due primarily to lack of access roads and rights-of-way. (See appendix table 29 for detailed summary of cut by working circles.)

The average volume sold for the period 1958-1960 was 78.6 MM board feet.

## 3. FOREST DESCRIPTION

### a. Land Ownership and Land Class

The ownership pattern for the entire working circle, except the Red Ives Block and a part of the Avery Block, is very complex. A large portion of the better growing sites is privately owned. For the working circle, as a whole, national forest represents 61.1 percent of the total area; other public 3.5 percent; state 5.7 percent; forest industry 22.2 percent and other private 7.5 percent.

The following table gives a breakdown of the land classes and ownerships within the working circle:

TABLE 1 - AREAS BY LAND CLASS AND OWNERSHIP <sup>1/</sup>

Ownership	Total Area	Non- forest Land	Forest Land				
			Total	Non- com'l.	Commercial		
					Total	Stocked	Nonstocked
	- - - - -	- - - - -	- - - - -	Acres	- - - - -	- - - - -	- - - - -
Nat'l Forest	863,698	369	863,329	48,211	815,118	697,397	117,721
Other Public	49,325	23	49,302	3,482	45,820	41,537	4,283
State	80,520	497	80,023	1,621	78,402	69,695	8,707
Forest Ind.	313,435	552	312,883	5,972	306,911	289,825	17,086
Other Priv.	106,020	12,819	93,201	5,465	87,736	74,680	13,056
TOTAL	1,412,998	14,260	1,398,738	64,751	1,333,987	1,173,134	160,853

<sup>1/</sup>These figures do not include data for other ownerships in areas where national-forest land consisted of scattered parcels only.

The ownership pattern is rather evenly distributed among the five ownership groups in the Calder, Clarkia, and Palouse Blocks. The Avery Block, on the other hand, is characterized by having most of its area in two large ownerships--Northern Pacific Railway and national forest. These ownerships occur as alternate sections on the south side of the St. Joe River. The rest of the Avery Block and nearly all of the Red Ives Block are solid national forest. There are no reserved areas within the working circle; however, preliminary plans to establish a natural area in the North Half of sec. 32, T. 44 N., R. 5 E. have been formulated and agreed to. A report of the proposal will be prepared by the Intermountain Station for formal review. In accordance with the Multiple Use Act of 1960, various areas requiring special treatment are recognized. These are as follows:

<u>Special Treatment Areas</u>	<u>Area</u>
Administrative sites and campgrounds	99 acres
Roadside Zones	28 "
Total	127 acres

Certain additional areas, as outlined in the recent national forest recreation survey may be subject to special treatment also. These are:

Potential campgrounds	526 acres
Potential roadside zones	1,057 "
Total	1,583 acres

Also the proposed Larkins-Mallard Peaks Scenic Area, covering about 17,000 acres, may be subject to special treatment when current studies are completed.

#### b. General

Forested areas are more or less continuous throughout the working circle, except for private lands located mainly at lower elevations of the Palouse and Clarkia Blocks that have been cleared for cultivation. Also there are a few natural parks and grasslands, and a few high rocky areas along the backbone of the major mountain ranges. Elevations range from 1,600 feet on the Little North Fork of the Clearwater River to nearly 7,000 feet on the Avery and Red Ives Blocks. Soils and climate are generally favorable for timber production. With modern logging methods, very little area is classed as nonoperable. The steep rugged slopes in the upper St. Joe River canyon are being logged by a modified skyline system. About 50 to 60 percent of the land area within the working circle has been burned over within the last 100 years. The more severe fires occurred during the 1880's, 1910, 1919, 1929, and 1934. Many of the early burns are now satisfactorily stocked to pole stands. Most nonstocked lands are the result of reburns since 1910.

#### c. Forest Types

Forest types are designated by those species having a plurality of cubic volume within the stand. Many stands may have as many as 9 or 10 different species represented. Very few "pure" types are found. The type designation for seedling and sapling stands is determined by the species having the greatest stem count per acre. No volume determinations were made for seedling and sapling stands. The following forest types were recognized in the working circle: white pine, ponderosa pine, lodgepole pine, whitebark pine, western larch, Douglas-fir, Engelmann spruce, western hemlock, mountain hemlock, grand fir, subalpine fir, western cedar and cottonwood. These types represent all the commercial species growing within the working circle. To facilitate calculations, the types were grouped for the inventory purposes as follows: white pine, ponderosa pine, larch--Douglas-fir, spruce, hemlock-subalpine fir, grand fir, lodgepole pine-whitebark pine, and cedar.

#### d. Growing Stock Area

Areas of growing stock by type, size class, and ownership are shown in table 2. White pine is the most extensive type found, followed by lodgepole pine, larch, Douglas-fir, grand fir, and subalpine fir. Five other types, namely, ponderosa pine, whitebark pine, spruce, hemlock, and cedar occupy about 10 percent of the area within the working circle and are therefore less important.



TABLE 2 - AREA BY TYPE, SIZE CLASS, AND OWNERSHIP 2/  
(Commercial Forest Land)

St. Joe Working Circle 1/

Forest Type	Stand-size Classes					Total	Percent
	Sawtimber	Pole	Seedlings Saplings	Stocked Subtotal	Non- stocked		
----- Acres -----							
<u>National Forest</u>							
D	63,356	27,597	3,234	94,187	22,385	116,572	14.3
P	1,464	2,370	560	4,394	-	4,394	.5
W	81,223	48,858	2,728	132,809	21,307	154,116	18.9
LP	2,981	115,898	9,730	128,609	38,926	167,535	20.6
WLP	15	215	-	230	-	230	-
GF	89,664	1,701	317	91,682	7,811	99,493	12.2
AF	22,901	17,327	2,904	43,132	5,644	48,776	6.0
S	30,808	1,298	10	32,116	1,646	33,762	4.1
MH	25,916	2,390	3,798	32,104	2,815	34,919	4.3
WH	1,452	163	140	1,755	80	1,835	.2
C	8,009	84	201	8,294	116	8,410	1.0
L	60,559	60,897	6,629	128,085	16,991	145,076	17.9
TOTAL	388,348	278,798	30,251	697,397	117,721	815,118	100.0
Percent	47.6	34.3	3.7		14.4	100.0	
-----							
<u>Other Public</u>							
All Types	29,525	10,647	1,365	41,537	4,283	45,820	
-----							
<u>State</u>							
All Types	44,341	23,986	1,368	69,695	8,707	78,402	
-----							
<u>Forest Industry</u>							
All Types	232,995	52,689	4,141	289,825	17,086	306,911	
-----							
<u>Other Private</u>							
All Types	45,434	26,231	3,015	74,680	13,056	87,736	
-----							
<u>All Ownerships</u>							
All Types	740,643	392,351	40,140	1,173,134	160,853	1,333,987	
Percent	55.5	29.4	3.0		12.1	100.0	

1/ For block data see appendix.

2/ Does not include other owner data in certain compartments where only Forest Service land was typed.



Age class distribution is not seriously out of balance except for the 41-80 year age class which occupies 38.9 percent of all stocked acres (see appendix table 18). The younger age stands will contribute large volumes of merchantable material as they mature. Planting surveys have recently been completed on many of the areas classed as nonstocked. Indications are that actual plantable acreage will fall far short of the total nonstocked acreage shown because of severe sites, winter game use, restocking, and other factors. Under the current level of financing, all nonstocked areas will have been given an extensive examination within three years.

Site quality percentages by types are shown in appendix table 19. Based on a weighted average of all types, 53 percent of all sites are rated good, 27 percent medium, and 20 percent poor. The white pine type, followed by larch and Douglas-fir, has the highest percentage of acreage in good sites. Site quality is well above average for Region One.

Thriftness is variable but could be improved in most areas by cultural treatment. Many young stands are badly overstocked and losing thrift, especially on the poorer sites.

e. Growing Stock - Volume

Volumes of green growing stock in the working circle by species, size class, and ownership are shown in table 3. Similar tables may be found in the appendix for each block. A breakdown of sawtimber volumes within each type is indicated by table 4 for national-forest lands only. The white pine and grand fir types each have about 30 percent of the total volume in the working circle. Species-wise, Douglas-fir, grand fir, and white pine lead in volume with 23.2, 22.5, and 17.7 percent of the total volume respectively.



TABLE 4 - VOLUME OF LIVE SAWTIMBER BY TYPES AND SPECIES

## NATIONAL FOREST LAND

St. Joe Working Circle 1/

Forest Types	Area-Sawt. & Pole Strata Acres	Sawtimber Volumes by Species											Other Products Total MCF	
		W	P	L	D	S	AF	GF	MH WH	IP	C	Total		
		-	-	-	-	-	MBF (Scribner C)					-	-	-
D	90,953	61,377	51,246	80,550	271,788	7,805	10,450	135,052	1,900	46,053	45,038	711,259	62,238	
P	3,834	763	8,653	620	3,586	-	-	682	-	92	-	14,396	1,361	
W	130,081	606,677	23,161	93,500	394,192	98,980	7,960	264,785	9,950	71,858	73,892	1,644,955	97,702	
LP-WLP	119,109	20,756	-	3,100	51,580	27,953	3,460	78,025	-	58,578	-	243,452	77,404	
GF	91,365	198,679	27,339	168,500	320,055	64,114	5,750	611,498	20,200	15,905	191,301	1,623,341	42,604	
AF	40,228	47	-	334	3,009	32,752	44,208	-	4,200	3,942	-	88,492	16,186	
S	32,106	439	19	8,620	44,006	112,657	34,826	6,770	970	15,690	56	224,053	17,997	
MH-WH	29,921	4,491	-	4,030	4,863	19,088	2,100	-	122,765	286	11	157,634	7,348	
C	8,093	1,206	-	2,083	1,000	2,290	-	17,642	2,865	1	32,607	59,694	3,253	
L	121,456	70,720	-	201,000	169,563	63,850	23,600	110,479	10,300	3,348	32,021	684,881	72,921	
TOTAL	667,146	965,155	110,418	562,337	1,263,642	429,489	132,354	1,224,933	173,150	215,753	374,926	5,452,157	399,014	
PERCENT		17.7	2.0	10.3	23.2	7.9	2.4	22.5	3.1	4.0	6.9	100.0		

1/ For block totals see appendix.



Board-foot volumes are for trees 11 inches d.b.h. and larger in terms of the Scribner Decimal Log Rule. Cubic-foot volumes are for trees 5 inches to 11 inches in d.b.h. Factors used to convert from cubic feet to board feet and for other conversions may be found in table 14 of the appendix.

The present volume of growing stock is far short of that which available sites could support. This is especially true in the lodgepole pine, grand fir and subalpine fir types.

Present inventory of sawtimber is 5,452,157 MBM + 436,172 MBM two times out of three, or a sampling error of 8 percent. With an even distribution of age classes and 70 percent of normal stocking, the working circle would support volumes of approximately 10,321 MMBM.

In addition to merchantable green material, there is within the working circle approximately 23 MM cords of salvable dead and usable cull material (see appendix table 21). Much of this volume can be used only for low-value pulpwood or fuelwood under current utilization standards. This volume is expected to decline gradually as older stands are harvested and as salvage operations remove salable material. Much of the cedar volume contained in this total is suitable for shakes and other products which are currently in good demand.

#### f. Timber Quality

Timber quality for sawtimber trees in the working circle is summarized in appendix table 20. This material was derived from the inventory data in accordance with "Field Instructions for Forest Inventory-Rocky Mountain Area" dated 1957.

Many areas of national-forest land now contain only species of low value. Most of these lands were in private ownership before the high value species were removed. Upon removal they were donated to the Forest Service or exchanged for other land and/or timber. This condition, together with certain areas of overmature timber, and timber in which blister rust is exacting a heavy toll, has contributed to a general decadent condition of the overmature stands on the forest. Young stands, on the other hand, are generally thrifty except where greatly overstocked.

#### 4. MANAGEMENT OBJECTIVES

A large part of the national forest timber being cut on the working circle goes to mills outside of the area. However, there are 11 mills within the working circle which are in some degree dependent upon this sawtimber. The combined capacity of these mills exceeds the sustainable sawtimber cut from both national-forest and private lands. Little utilization is now made of material less than 11 inches in size and of "minor" species such as lodgepole pine, subalpine fir, and hemlock. Considering this situation, the following objectives are established:

a. Community Stabilization

- (1) Provide industry with an opportunity to obtain the full allowable cut from the working circle.
- (2) Encourage the use of permanent communities rather than logging camps and other short-lived communities within the forest wherever possible.
- (3) Encourage more complete utilization of forest products, especially material less than sawtimber-size and dead and cull trees.
- (4) Practice multiple-use management so as to enhance all resources wherever possible.

b. Marketing Program

- (1) Follow through aggressively on a program to provide the full allowable cut giving priority to those areas where insect, disease control, and silvicultural needs are most urgent.
- (2) Program sales so as to logically develop a suitable transportation system, with consideration being given to the needs of multiple-use management.
- (3) Subject to the limitations of items 1 and 2 above, offer sales of a size to meet the needs of local established industry.
- (4) By specific offerings, encourage industry to adapt for the utilization of material under 11 inches d.b.h.
- (5) Continue to keep industry informed as to our annual sales program.

c. Silvicultural

The principle silvicultural objective will be to produce the maximum quantity and quality of forest products in conjunction with other land uses. Region One marking guides (FSH 2442.8) establishes management objectives for each timber type and will be followed. Consideration of all resource values will be made in arriving at the best silvicultural practices. Specific objectives for each type follow:

- (1) White Pine Type - Regenerate and grow the largest amount of white pine practicable under the limitations imposed by blister rust. (See also Section 8e Disease-Blister Rust.)

The objective will be to preserve and add to the present supply of white pine in order to sustain the largest practicable cut for the longest time possible. This will be accomplished by harvesting the most vulnerable stands and trees first, and by protecting existing stands from insects and disease.

Where white pine land cannot be used to grow white pine, the associated species that will do best on each area will be favored. Preference will be given to cedar, grand fir, spruce, larch, Douglas-fir, or lodgepole pine in that order.

On areas outside the blister rust control zone, where there is a strong possibility that it may be included, the objective will be to leave an ample seed tree source to obtain natural regeneration of a stand containing a high percentage of white pine in case future circumstances make it feasible to grow and protect it.

(2) Ponderosa Pine Type - This type is of little significance in the working circle. The objective in management shall be to reproduce a maximum of even-aged ponderosa pine within the type by clear cutting in blocks. Ground preparation should be timed with seed production to help establish natural reproduction on favorable sites. Where natural reproduction does not become established within a reasonable time, plans will be made for planting.

(3) Spruce-Subalpine fir-Mountain Hemlock Types - Favor spruce over other species. Manage as even-aged stands by clear cutting in alternate blocks. On areas partially cut during the spruce bark beetle epidemic, attention should be given to relogging to minimize windthrow losses. Areas cut over and not fully restocked naturally should be planted to spruce within three to five years. Restore productively to other areas which have degenerated from spruce to scattered stands of subalpine fir, mountain hemlock, and brush, by rehabilitation and planting.

(4) Larch--Douglas-fir Types - Perpetuate the type by producing even-aged stands through block or patch cutting. Management practices should aim toward minimizing losses from dwarfmistletoe and the Douglas-fir bark beetle. In two-storied stands, high priority will be given to removal of the infected and decadent overstory.

(5) Lodgepole Pine Type - Owing to its slow growth, low-value products, and susceptibility to insects, lodgepole pine will not be perpetuated unless it is the best species for the site. Where it is most appropriate, manage for even-aged stands by patch cutting in alternate blocks. Where other species would be more productive, and especially if a desirable understory now exists, cut to obtain early utilization of lodgepole pine and release this understory.

(6) Cedar, Grand fir-Hemlock Types - Much of the acreage in this type has been partially cut for white pine and cedar poles leaving a decadent overstory. Where these stands occupy white pine sites, the management objective will be to restore them to white pine by clear cutting the overstory. If protection cannot be provided, old growth areas should be clear cut and burned to favor cedar, spruce, and grand fir in that order.



d. Growing Stock

(1) Build up quality growing stock on all commercially productive forest land as early as possible. Regeneration of nonstocked and poorly stocked areas, early regeneration of cutover areas, adequate protection from fire, insects and disease, and attention to cutting within allowable cut limits are the principal means to the end.

(2) Secure better age class distribution by clear cutting a substantial portion of the mature and overmature timber each year according to prescriptions contained in the regulation section.

(3) Give impetus to studies aimed at showing (a) the best methods for regeneration of brushfields and heavily grazed areas, (b) for antibiotic treatment of white pine planting stock and (c) for protection of reproduction from dwarfmistletoe.

(4) Extend antibiotic treatment to white pine stands which contain good stocking outside of existing control units.

(5) Complete extensive surveys and continue intensive surveys of nonstocked brushfields in the Calder, Avery, and Red Ives blocks to determine planting needs.

e. Forest Development

(1) Through timber sales and appropriated funds, work for early completion of the timber access road system.

(2) Consolidate ownership within compartments containing significant national forest acreage, where exchange will lead to more efficient administration.

(3) Work toward obtaining Federal aid in development of road systems in compartments containing large nonstocked acreages and in compartments where timber values are insufficient to construct needed roads.

f. Sustained Cut

Establish the maximum amount of timber which may be cut from national-forest lands annually and by periods.

5. COORDINATION WITH OTHER USES

The Multiple Use-Sustained Yield Act of June 12, 1960, provides for use of all resources of national-forest lands according to the principles of multiple land use. While multiple use plans are not available at this time for the St. Joe Working Circle, they will eventually point out the areas needing coordination of uses and provide the manager with action guides. These plans will also point up key values on specific areas.

In the meantime, several resource plans and policies are available. The NFRS has been completed on the entire working circle. Some blocks which are the same as the ranger districts have completed wildlife plans. Grazing allotment analysis maps have been prepared on a number of allotments and grazing management plans are being written. Watershed project plans for the rehabilitation of disturbed areas are being initiated and will point out the areas in need of special coordination with timber use plans. (Refer to FSH 2413.23 and 2413.24)

Particular instances of coordination with other uses are discussed in the following resource topics:

a. Recreation

The potential recreation sites inventoried in the NFRS will be given close attention in preparation of sales plans, not to exclude timber cutting but to provide for preservation and improvement of recreation values. It may be desirable on a given site to remove undesirable trees before recreation improvements are built. The removal of hazardous trees in campgrounds such as Laird Park will be a continuing process at intervals of three to five years. Each operation should be preceded by an informational effort to assure public understanding of the need to remove some trees for reasons of safety. A first class job of cleanup will eliminate most of the public objection to this type of cutting.

The necessary removal of diseased white pine in the St. Joe River canyon by skyline logging system presents the problem of unsightly landings near the forest highway. The system is the best available, but when experimental helicopter logging becomes operational this may be the place to test it. In the meantime, thorough cleanup and planting of fast growing trees or shrubs for cover and screening will be practiced. The preservation of aesthetic values by maintaining timber screens on streams, roadside zones, and campgrounds is important.

Intermittent use of the St. Joe River above slack water for log drives is not compatible with recreation use, but cannot be arbitrarily eliminated, particularly when private timber is involved. The forest can, however, do everything in its power to promote more economical log transportation by rail and by truck through improvement of Forest Highway No. 50 to lessen the conflict between recreational use and log driving.

It is possible that the proposed Bruce's Eddy dam will be built and create waterfront and recreation values on the reservoir in Elk Creek. The more imminent possibility is that some national-forest land will have to be cleared in the reservoir area.

A limited number of scenic area withdrawals are under discussion and should be studied and acted upon as early as possible in the life of this plan.



## b. Wildlife

Timber cutting, for the most part, will help to sustain big game habitat by creating openings for browse plants to offset the increasing crown closure on many acres of young stands. Reforestation of brushfields is underway and will probably be accelerated during the period of this plan and there are two principal situations to consider in preparing planting plans. On the Red Ives, Avery and Calder blocks there are vast brushfields on which reforestation can aid in bringing the summer range into balance with the winter range for the elk herds. No attempt should be made to reforest winter range. On the Clarkia and Palouse blocks elk and deer are widely dispersed. No large herds exist in localized areas. The reforestation of the comparatively small brushfields in these blocks should be carefully considered.

Natural regeneration and growth is gradually shrinking the game range on the Clarkia and Palouse blocks and in many areas attempts to reforest would not succeed. Combining game range transects with planting surveys will indicate areas where special timber harvest methods may be prescribed to provide game range. Observation indicates that elk will thrive in cutover areas close to human habitation and activity, and that highly productive hunting will be available if the habitat is maintained and access roads are provided.

The maintenance of mountain goat habitat in the upper St. Joe, while related to the questions of access and protection, is not directly involved in commercial timber management plans except possibly in border areas to which the district involved should give due consideration.

Grouse hunting is increasing in popularity and considerable management information has been provided by the Cooperative Fish and Wildlife Research Unit at the University of Idaho. Cutover areas can be good grouse habitat and can often be improved by the seeding of blue grass and white Dutch clover in moist areas on spur roads and skid trails as part of post-sale erosion prevention work. Any cost in excess of normal erosion prevention should be met by wildlife habitat project funds.

Maintenance of fish habitat is almost assured if good watershed management practices are employed in all timber activities and will be discussed in the topic on water.

## c. Water

The domestic water supply of several communities, including Coeur d'Alene, could be affected by conditions on national-forest lands of the St. Joe, though none of the communities depend directly on watersheds that are entirely national forest or even primarily so. Nevertheless, two important objectives stand out in the coordination of timber use with watershed protection. They are: first, to produce high quality water for downstream use, and second, to preserve the soil and furnish good examples of watershed management.

The quantity of water and rate of runoff as well as water quality are affected by removal of forest cover. Generally, peak flows are increased due to greater accumulation of snow on cutover areas and a more rapid melt. Some control can be exerted within drainages by scheduling of sales and coordinating when possible with private logging operations. A reduction in peak volume and greater sustained flow in the St. Joe River and its larger tributaries is anticipated as the old burns are reforested.

Water quality can be maintained if construction of roads, skid trails, landings, and stream crossings are carefully planned. Even on clearcut areas the relatively undisturbed forest floor does not erode, hence the development plan and engineering standards bear the main responsibility for preventing erosion. At times it will be necessary to compromise engineering concepts of long tangents and gentle curves for the protection of streams and soils. Some recommendations for the coordination of timber and water use are:

- (1) The sales contract should be specific concerning road construction and logging regarding both methods and seasons. For example, felling, bucking, and jammer skidding can be done during the spring breakup, whereas cat-skidding and trucking would be detrimental.
- (2) Location and grade of roads and skid trails should be firmly controlled.
- (3) Erosion prevention work should be done promptly at the close of each operating season and upon completion of logging in each cutting unit. Some means is needed to provide for the maintenance of erosion prevention structures after the purchaser's work is accepted and the sale closed.
- (4) Special cutting methods will be employed along streamside strips adjacent to live streams. Where roads parallel streams, adequate width of strip to provide a filtering zone must be provided and channel changes avoided except in extreme cases.
- (5) Land-use roads which will be opened for intermittent use should be constructed to minimum standards of width as every foot of disturbed ground may increase the erosion potential. Cross drainage on the surface as well as under the surface at live streams is necessary to dispose of runoff.
- (6) Location of mill sites, camps, or other occupancy should be supervised to prevent pollution of streams.
- (7) Planned clear cuts generally should be limited to 25 percent of the area of a small drainage.

#### d. Grazing

All grazing is managed under transitory range policies and occurs only on the Palouse, Clarkia, and Calder Districts except for some sheep use on the Avery and Red Ives Districts. Though the grazing permits are temporary there is little likelihood that more than a very few will be terminated. The presence of natural meadows and the creation of new forage areas through timber harvesting will sustain most of the allotments. There are many permittees on the forest who depend heavily on this summer range, and are willing cooperators. Areas where grazing may be considered the dominant use are natural mountain meadows. Here trees tend to colonize along the fringes of these meadows and require special treatment during harvest. Such meadows should be managed for the maximum producing of forage.

Several allotments exist with no more than some cutover areas as the range resource. Frequently the percent of national-forest land ownership is very low. Such allotments should be discontinued when supported by a range analysis which shows that a manageable grazing allotment does not exist.

An administrative study has been initiated on the Flat Creek sale area to determine the effect of properly regulated grazing on establishment of reproduction.

#### e. Mining

Mining is not a major industry on the St. Joe National Forest, but it does cause problems of coordinated use. Most of the mining activity has been on the surface--gold dredging on the Palouse, strip mining for garnets on Emerald Creek, and the latest is the open pit mining of clay deposits near Bovill. The possibility of placer mining on the Upper St. Joe is a perennial anxiety to sportsmen and others interested in that stream. Iron deposits on Gold Hill are currently being explored by extensive drilling operations.

Where mining is on donated lands with mineral rights reserved and not subject to mining law, the timber and other surface values may be lost. Elsewhere on mining claims, placer operations of insufficient size to be subject to the surface restoration provisions of Idaho law continue to destroy timber, watershed, and recreation values.

Following the surface rights determination in the Gold Creek-Palouse area, coordinated planning by the Forest Service and miners on land to be cleared for placer mining, and Forest Service sales of the timber are resulting in reduced damages to other values. However, the surface rights determination did not provide maps of claims in most cases since verified statements were not filed and detailed examinations were not



a requirement. The need for an assembled map of unpatented claims remains. Such a map would help foresters coordinate mining use with other resource management, and when timber activities are being planned it is still necessary to coordinate with mining claimants so that use of the surface and timber resource does not interfere with legitimate mining operations. Withdrawals from mineral entry have been made for recreation and administrative sites.

## 6. REGULATION

### a. Rotations

Rotations are set to agree with the culmination of mean annual growth in board feet (International 1/8" Rule) for each forest type except lodgepole pine. The rotation for lodgepole pine is set to agree with the culmination of mean annual growth in cubic feet for trees 5" d.b.h. and over. Rotation recommended for each of the forest types and used in the calculation of growth and allowable cut are shown below:

<u>Forest Types</u>	<u>Rotation in Years</u>
White pine, ponderosa pine	120
Grand fir, hemlock, cedar	120
Larch, Douglas-fir	140
Spruce, subalpine fir, mountain hemlock	140
Lodgepole pine	<u>100</u>
Weighted Average	126

Rotations recommended apply to average site conditions. Individual stands growing on poorer or better sites than average will require more or less time to mature as the case may be.

Rotations are early enough in the lives of the principal species to minimize losses from insects and diseases. They are not sufficiently long to produce much high quality material. If a larger proportion of high quality timber is desired it will have to be produced by pruning, or by allowing some trees or stands to exceed the rotation age.

Many of the existing stands now exceed the recommended rotation age, or will before they are cut, because of lack of access roads and considerable age class irregularity. There is not a great preponderance of overmature timber in this working circle. However, if cutting is concentrated in such overaged timber as there is, the average cutting age will be at recommended levels in about 20 years.

### b. Cutting Cycles

As all major types are brought under even-aged management, regeneration cuttings will occur at intervals coinciding with rotation ages. Cuts to improve growing conditions in immature stands, and to preserve protective covers on severe sites, will tend to be cyclic, however. Intervals between improvement cuttings will coincide as nearly as possible with best growth response. This, for most types, is from 15 to 20 years.

Cuttings in many young stands will not start until volumes to be removed have attained commercial importance. This usually will not occur until stands reach about one-half rotation age. Cuttings before that time will depend upon unusual market conditions, or the availability of appropriated funds to do noncommercial cultural work. Satisfactory stocking conditions will be maintained throughout all periods of intermediate cuttings.

### c. Growth and Mortality

It is important to obtain the maximum amount of growth from the existing growing stock and site potentials in any management unit. Only so, can productivity of the unit be increased. Little can be done to change site potentials at this time. Much can be done to improve the growing stock.

Improvement of growing stock can be accomplished by restocking nonproductive areas and by thinning or improvement cuttings in overdense stands. Probably the most prompt returns can be derived by making improvement cuttings in dense pole stands (reducing the stocking), thus capturing impending mortality, releasing selected crop trees, and stimulating growth. More than half of the total acreage of growing stock is of an age that will respond to such treatments. Other measures, such as planting and cleanings also are very desirable, but will have less prompt effect on growth.

It is not only important to get good growth but to measure it as well. The measurable amount of growth will influence the allowable annual cut and the economy of the working circle to a marked degree.

Growth and mortality data for this working circle were secured from plots taken during the 1959-1960 inventory. This information yielded net periodic annual growth rates of 113 MM board feet of sawtimber and 149 M cords of other products during the period 1951-1960 inclusive (Appendix table 15). Such rates are above the recommended annual cut but are low compared to productive capacities.

TABLE 5 - CURRENT AND POTENTIAL GROWTH OF SAWTIMBER AND OTHER PRODUCTS  
ON NATIONAL FOREST LANDS

Growth and Mortality	Sawtimber		Other Products		
	/acre/yr.	Total	/acre/yr.	Total	
	BF	MMBF	CF	MCF	M cds <sup>3/</sup>
Periodic Annual Growth(Net) <sup>1/</sup>					
Past 10 years (1951-1960)	169 <sup>2/</sup>	112.8	20	13,418	149
Near future estimate	182	121.5	20	13,418	149
Mortality					
Past 5 years (1956-1960)	49	33.0	-	-	-
Sustained Yield Capacity <sup>4/</sup>	284	231.8	22	18,248	203
Satisfactory (70% Normal)MAI	200	162.2	16	12,706	141

<sup>1/</sup>From inventory data taken in 1959-1960

<sup>2/</sup>Rate for sawtimber and pole strata only of 667,146 acres

<sup>3/</sup>90 cubic feet = 1 cord

<sup>4/</sup>From "Tables of Yield and Mean Annual Increment of Fully Stocked Stands in Major Forest Types in Region One." U.S. Forest Service, Missoula, Mont. 1957. Prorated against total commercial forest acreage of 815,118 acres.

The main reason for the low growth rate during the past decade was the high rate of mortality. Mortality was particularly high during the early 1950's when much mature volume was windthrown. Even greater amounts were lost in the ensuing spruce bark beetle epidemic. Losses of spruce have subsided in recent years (the past five) but it still remains high in white pine due to blister rust. Mortality during the past 5 years (1956-1960) has been at the rate of 33 MM board feet annually or about 23 percent of gross growth. It should become less as the backlog of overmature timber is harvested.

Growth potentialities of the working circle, as reflected by site qualities, is above average for most types. It is particularly high on typical white pine, grand fir, and cedar-hemlock sites. Even for larch and Douglas-fir, it is well above average. Only for spruce, subalpine fir, and lodgepole pine is it average.

The sustained yield capacity is much above the present indicated growth. Under fully stocked conditions the sustained yield capacity can be about 232 MM board feet of saw logs, plus other products, which is more than twice as great as the area is growing at present. For conditions approximately 70 percent stocking (with 30 percent unproductive holes) the capacity could be about 162 MM board feet--about 50 percent greater than present growth. Both these "ideals" of productivity probably could be exceeded by wide scale application of good silvicultural practices.

#### d. Cutting Methods

Cutting methods for the various forest types will be in accord with the regional marking guides unless otherwise specified. Methods called for by the guides will be correlated with other important land uses and adjusted when necessary to accommodate those uses. They will be supplemented by specific marking instructions for each timber sale area. A revision of the guides is in process to more fully cover intermediate cuttings.

District personnel will supplement the timber management plan with more detailed plans in selected compartments, as more intensive data become available. This will include analysis of uses, silvicultural recommendations, a cutting plan for each stand budgeted for cutting, the access road system required, logging, T.S.I., and slash disposal methods to be used, planting survey and planting programs to be followed if needed, and measures to apply in special problem areas.

#### e. Allowable Cut

Several regulatory methods were considered and used in setting the allowable cut for the working circle. These were the Austrian, Hanzlik, Von Mantel, and Kemp formulas, and the Tabular Check method (Table 6 and Appendix Tables 22, 23, 24, 25, 26 incl.) The several methods exhibited rather close agreement in allowable annual cuts except for Hanzlik, which was high. Eliminating Hanzlik, the other four methods averaged about 92 MM board feet of sawtimber.



TABLE 6 - INDICATED ANNUAL ALLOWABLE CUT OF SAWTIMBER AND OTHER PRODUCTS  
NATIONAL FOREST LANDS

REGULATORY METHODS

Regulatory Method	Annual Cutting Area	Volumes for All Types & Species		
		Sawtimber	Other Products	
	Acres	MMBF	MCF	M Cords
Kemp	8,427	92.7	4,823	53.6
Von Mantel	-	87.2	6,498	72.2
Austrian	-	92.7	-	-
Hanzlik	-	107.6	7,257	80.6
Tabular Check	7,450	95.0	-	-

The Tabular Check method, which is a test of applicability of a proposed cut against the growing stock and anticipated growth, indicated that a cut of 93 to 95 MM board feet can be sustained over the next rotation without causing a hiatus at any point, and without dipping into growing stock much below recommended rotation ages. It also showed a strong likelihood that the cut will have to be increased some 70 years hence, when a large acreage of young growth, now approximately 50 years old, becomes mature (Appendix table 26).

Regulation, however, will apply primarily to areas. Area regulation methods show rather wide variations in allowable cut. The Kemp formula indicates that about 8,400 acres should be cut over annually. This includes more than 1,500 acres of lodgepole pine. Since there are only about 3,000 acres of sawtimber in the lodgepole pine type, and 80 percent or more of the total acreage is below 60 years of age, the estimate obviously is high. The type cannot be cut at the rate recommended by Kemp for more than a few years, after which it would have to drop to practically nothing. It is better, therefore, to cut the lodgepole pine type much lighter.

The Tabular Check method indicates a cut of 7,400 acres. This is believed to be much more realistic since it considers the harvest of lodgepole pine (the pole portion) at a much later date, in accord with its age.

Strict area regulation would require cutting only about 6,500 acres annually. Present mature and overmature stands, with their inadequate stocking, would not yield sufficient annual cut in volume if harvested at that rate. Accordingly, an annual cut of 7,400 acres, as indicated by the Tabular Check method, is believed to be most appropriate at this time and is hereby set as the allowable cut for the working circle. This will be matched with volume cuts of approximately 93 MM board feet of sawtimber and 50 M cords of other products.

Cuts of area by major types are shown in table 6a, together with approximate species breakdowns that will be obtained.

TABLE 6a- ANNUAL ALLOWABLE CUT BY BLOCKS, TYPES, AND SPECIES

## NATIONAL FOREST LAND

Kind of Cutting	Annual Cutting Area by Forest Type							Annual Cut by Species Groups							Other Products M cords
	acres							MMBF							
	W-P	L-D	GF-C-H	S-AF-MH	LP-WH	Total	W-P	L-D	GF-C-H	S-AF-MH	LP	Total			
Final Harvest Intermediate -	652	605	-	503	200	2,040	RED IVES BLOCK							12.0	
	100	400	-	100	1,000	1,600	12.0	6.0	0.5	2.0	1.0	21.5	3.2		
	-	-	-	-	-	-	.1	.4	.1	-	1.0	1.6	-		
Final Harvest Intermediate -	745	828	110	430	72	2,185	AVERY BLOCK							13.0	
	400	600	50	50	1,000	2,100	14.0	8.0	1.0	2.0	1.0	26.0	4.2		
	-	-	-	-	-	-	.2	.8	.1	-	1.0	2.1	-		
Final Harvest Intermediate -	67	230	210	152	41	700	CALDER BLOCK							4.0	
	200	400	100	-	150	850	1.0	2.5	2.5	0.5	-	6.5	1.6		
	-	-	-	-	-	-	.1	.5	.1	-	.1	.8	-		
Final Harvest Intermediate -	128	380	345	93	54	1,000	CLARKIA BLOCK							8.0	
	300	500	150	50	150	1,150	3.0	3.5	6.5	0.5	0.5	14.0	2.4		
	-	-	-	-	-	-	.3	.4	.3	-	.2	1.2	-		
Final Harvest Intermediate -	208	357	835	22	53	1,475	PALOUSE BLOCK							13.0	
	400	600	200	-	100	1,300	3.0	5.0	15.5	1.0	.5	25.0	2.6		
	-	-	-	-	-	-	.3	.4	.4	-	.2	1.3	-		
Final Harvest Intermediate -	1,800	2,400	1,500	1,200	500	7,400	WORKING CIRCLE TOTAL							50.0	
	1,400	2,500	500	200	2,400	7,000	33.0	25.0	26.0	6.0	3.0	93.0	14.0		
	-	-	-	-	-	-	1.0	2.5	1.0	-	2.5	7.0	-		



The regulated volume of other products indicated in table 6a as 50 M cords pertains to the removal of material below sawtimber size and quality. Utilization of this material generally is urgent since it helps to prepare sites for complete stand rehabilitation and regeneration. Harvest of other products will be a timber sale requirement whenever utilization has proven economically feasible on other similar areas.

The forementioned cuts do not consider volumes that might be harvested as intermediate cuttings. Few such cuttings have been made to date in this working circle; however, there are strong indications that markets for small-size products will develop soon and sales can be made of this class of material. It is desirable, therefore, to regulate volumes to be cut from immature stands at this time.

Tables 6a and appendix table 27 show areas of dense young stands that should be given intermediate cuttings of one kind or another annually--also volumes that may be removed in such cuttings. Areas to be cut over will be stressed rather than volumes to be obtained. The volumes obtained in intermediate cuttings are in addition to those which are removed in reproduction, or final harvest cuttings. No reduction in volume of final harvest cuttings is anticipated, at least in respect to saw log contents, as a result of the preliminary cuts.

For the present, the calculated allowable cuts in young stands should be considered as cutting objectives rather than maximum allowances. A number of years probably will have to elapse before the full allowable cut can be marketed. Under occasional ideal market conditions it might be well to greatly exceed the indicated allowable cut to acquire stand betterment more rapidly.

Accessibility, operating, and marketing conditions may not permit cutting at the precise rates specified in table 6a. To allow for the usual contingencies, rates specified may be exceeded by as much as 25 percent in one year, provided the total for a ten-year period is within 10 percent of the area and volume objectives. Undercuts may be accumulated within the plan period, but liquidation of any accumulation will be subject to the 25 percent overcut limitation.

A cut of salvage products has not been regulated, nor is regulation of these products planned. The perishable nature of this material makes it desirable to harvest it in unlimited quantities as rapidly as possible. Quantities available are shown in appendix table 21.

It is important to charge the volume cut against the right allowable cut category. Volumes secured from harvest cuttings cannot be charged against the intermediate cutting allowance, nor vice versa. Neither can the size of material be ignored. Should any substantial amounts of sound sawtimber be harvested as poles, posts, pulpwood, etc., such volumes

must be charged against the sawtimber allowable cut. A considerable volume of larch, lodgepole pine, spruce, hemlock, and subalpine fir is apt to be utilized in that way.

Cutting control applies to the working circle rather than to blocks or ranger districts. Since administrative control is by districts, apportionment of the total allowable annual cut is and will be to districts according to prevailing timber management needs within the working circle (table 6a). Such apportionments and reapportionments are subject to periodic adjustments by the forest supervisor during the effective life of the plan.

The regulated cut can be increased substantially through the application of more intensive forestry practices and the provision of greater accessibility. Important gains can be made in the near future through improvement cuttings, thus capturing volumes that would otherwise be lost, stimulating the growth of crop trees, and holding destructive agencies in check, and by restocking nonstocked areas.

Stocking is poor or entirely absent on about 23 percent of the commercial forest area. It is overdense on much of the remainder. With better stocking and better spacing, the allowable cut could approach and even exceed the growth of a normal forest, reckoned as 232 MM board feet of sawtimber plus other products.

The sustained cut from other ownerships within the working circle is very significant. Growing stock on lands of all other ownerships is estimated to provide a sustained cut of about 90 MM board feet of sawtimber and about 50 M cords of other products, which is just about the same as from national-forest lands. The sustained cut from lands outside the working circle is unknown, but it too is substantial.

#### f. Cutting Budget

The cutting budget is contained in the current action plan for the working circle (Appendix table 32). It indicates the areas and volumes planned for sale.

The plan will be revised annually to (1) keep it current, (2) maintain the allowable cut, and (3) obtain the desired silvicultural objectives. The annual sales program is coordinated with this five-year plan. The sales program is presented to prospective purchasers and other interested parties in an open meeting in the spring of each year.

### 7. SALES POLICY

All sales will be made in accordance with policies established in FSH 2430 and regional supplements.

a. General

- (1) Prepare and administer timber sales in harmony with other land uses as provided by the requirements of the "Coordination with Other Uses" section of this plan.
- (2) Develop an adequate access road system in accordance with the transportation plan to the fullest extent possible under the limitations of the "prudent operator" concept.
- (3) Provide for adequate reproduction of desirable species and work toward a balanced distribution of age classes in growing stocks.
- (4) Give first priority to sales of timber killed, damaged or endangered by disease or insects. Next in priority will be residual old growth timber.
- (5) Control the location, character and standards of cutting practices, logging roads, and camps.
- (6) Keep fire hazards due to logging activity to an acceptable minimum.
- (7) Provide for collection of stand improvement money necessary to rehabilitate cutover areas, and other needful cultural work which is based on well prepared plans.

b. Size of Sales

Sale size will be governed by silvicultural objectives, rehabilitation needs, species value, needs of local industry, and cost of improvements.

Generally, the costs of developing a suitable road system become the most important single factor in determining sale size. Very few roads within the working circle have been constructed to ultimate transportation plan standards. Several large compartments such as Simmons Creek, Eagle Creek, Mowich Creek, and Butte Creek are completely undeveloped and contain much terrain where road construction will be very difficult. In compartments of this type, sales in the 20 to 50 MM board-foot category will be necessary unless such roads can be financed with Federal funds. The bulk of forest volume, however, will come from smaller 5 to 15 MM board-foot sales.

Consideration of local industry generally is essential after silvicultural considerations are met. Certain sales will be designed to meet the needs of large operators; others will be set up for small operators. It will be the policy to make mostly short-term sales, thus providing less risk for the operator.

An active small sales program will be continued in the working circle where there is local demand. Sales made under this program will normally be under 2 MM board feet and pointed mainly toward harvest of salvage or small-sized material.



c. Point of Manufacture

No restrictions will be placed on the point of manufacture. In the past, most sales have been appraised to either the St. Maries Lumber Co. at St. Maries or the Potlatch Forests Inc. mill at Potlatch, which were the nearest mills having complete manufacturing facilities. Recently, due to the expanded sales program and additions to the transportation system, some sales have been appraised to the C. G. Bennett Lumber Co. at St. Regis, Montana, and the Riverside Lumber Co. at Orofino. Much of the timber logged from the working circle has been manufactured at Coeur d'Alene, Lewiston, Heutter, Post Falls, and Superior. Competition from these areas for logs can be expected to continue to be keen.

d. Merchantability Specifications

Regional merchantability specifications found in FSH 2432.23 will be used as a guide. The long-range policy is to secure maximum utilization of forest products consistent with market conditions, distance to market, and other factors. Cost of production, plus a reasonable profit for an efficient operator, will be used to gauge merchantability. Removal of products which will not return a reasonable profit will only be required when silvicultural reasons are overriding.

Maximum stump height will be 14" except for cedar which may be set at 24" when necessary. The standard trimming allowance of 6" per 16-foot or shorter log will continue to be used. Utilization of material of less than saw log size will be encouraged especially from clear cut blocks.

e. Logging Methods

Logging methods will be controlled in all sales of national forest timber to prevent damage to residual stands, preserve the productivity of the site, prevent damage to the watershed, and meet other requirements of multiple-use management. Adequate cost allowances will be made in timber appraisals to provide for conduct of logging by acceptable methods and with necessary care.

Jammer, overhead cable, or horse skidding will be required where erosion hazards and needs of the residual stand justify. More study is needed to determine under what conditions tree-length skidding may cause less damage and present less of a slash problem than other methods.

Careful attention will be paid to road drainage problems before, during and after logging, to prevent soil erosion. Temporary erosion measures and structures will be required where necessary on roads, skid trails, and landings.

Current approved policies applying to cutting and logging practices in streamside and recreation zones will be followed unless altered by policy changes. The following practices will be observed:

(1) Locate road prisms (including clearing) outside of streamside strips, whenever possible. When possible, a minimum of a one-chain strip will be established on both sides of all permanent streams where disturbance is apt to cause erosion damage and siltation during peak flows.

(2) Falling and skidding will be away from the stream whenever possible.

(3) If crossings are necessary, such crossings will be at designated places only.

(4) Stream channels will be kept free of logging debris and such debris as gets into them will be cleared out as a part of the logging operation.

f. Christmas Trees

Christmas tree sales will be made only when it has been definitely determined that removal of such trees will not adversely affect the stand for saw log production. Dominant or codominant crop trees, necessary to establish a well-stocked stand, will not be harvested as Christmas trees. Only those trees, whose removal will improve the stand, will be sold.

8. FOREST DEVELOPMENT

a. Transportation

(1) Present System

Railroads - The Chicago, Milwaukee, St. Paul and Pacific Railway enters the Avery District at East Portal on the Montana-Idaho divide and from there follows the St. Joe River through the entire unit. Its course is westward to St. Maries and thence past Coeur d'Alene Lake to Spokane. There is also a branch line from St. Maries to Clarkia, Bovill, and Elk River. To date, almost all sawtimber from the Avery and Red Ives Districts has been hauled into Avery by truck and shipped via rail to St. Maries and Coeur d'Alene. Some timber is hauled from the lower districts by rail but on a very limited basis. There is also a logging railroad from Bovill, Idaho, to Palouse, Washington.

Federal and State Highways

(a) U.S. Highway 95 (Alt.) runs through the western edge of the working circle--passing through St. Maries, Emida, and Princeton. It rejoins U.S. 95 near Potlatch. This road is paved and suitable for logging traffic.

(b) State Secondary No. 43 extends from near Santa to Elk River and bisects the Clarkia Block and the eastern third of the Palouse Block. The entire road is used for log hauling.



(c) State Secondary No. 8 runs from Bovill to Moscow along the southern edge of the Palouse Block. All of this road is paved and suitable for log hauling.

(d) State Secondary No. 7 runs north and south, connecting Harvard and Deary. This road has a gravel surface and is suitable for log hauling.

(e) Forest Highway No. 50 extends from St. Maries to Avery, following the course of the St. Joe River. This road has a gravel surface but is suitable for log hauling only for a short distance on the west end.

All of the above listed roads are kept open to traffic yearlong. Only Forest Highway 50 and that section of U.S. Highway No. 95 Alternate from Emida to Harvard are classified as forest highway.

County and National Forest Roads - The Federal and State Highway systems are supplemented by a network of county and national-forest roads. There are approximately 1,400 miles of this type constructed to various standards. Of this total, about 115 miles are primitive, 1,155 miles are graded and drained, and 125 miles have adequate gravel surface. To supplement this system the transportation plan lists 2,920 miles of proposed roads of all types.

Waterways - In the past a tremendous volume of timber was floated down both the St. Joe and St. Maries Rivers for manufacture at mills located on Coeur d'Alene Lake. The lower twenty-five miles of the St. Joe is navigable to tugs and is still important in transporting logs to mills located on and adjacent to the lake. No national forest timber is appraised for this method of transportation because of the adverse effect to watershed and recreation values.

#### Utilization Roads

(a) Needs - The present transportation plan lists the roads by classes as shown on the following table. Probably less than 10 percent of all roads listed on the transportation plan are currently constructed to the ultimate standard.

MILEAGE OF EXISTING AND NEEDED ROADS

Status	Block					Total
	Red Ives	Avery	Calder	Clarkia	Palouse	
	Miles					
Nonexistent	1,295.2	793.2	347.5	190.1	367.2	2,993.2
Existent primitive	1.0	14.4	23.3	42.1	35.6	116.4
Graded and drained	172.5	270.2	298.5	266.2	189.4	1,156.8
Gravel Surfaced	5.0	88.5	10.2	7.2	13.7	124.6
Bituminous surfaced				.5		.5
<b>TOTAL</b>	<b>1,473.7</b>	<b>1,166.3</b>	<b>679.5</b>	<b>466.1</b>	<b>605.9</b>	<b>4,391.5</b>

Listed below is a partial list of major forest development roads needed for current development in the working circle which generally will require Federal financing or supplemental aid:

<u>Forest Priority</u>	<u>Road No.</u>	<u>Name</u>	<u>Miles</u>	<u>Cost</u>
1	511	Simmons Creek	5.0	\$ 126,000
2	Bridge	Prospector Bridge		100,000
3	218	St. Joe River Road (Quartz to Simmons)	11.0	560,000
4	121A	Eagle Creek	6.0	180,000

(b) Policy - The forest transportation plan specifies standards, location, and length of each individual project. This plan with its periodic revisions will be used as a guide in developing access roads in all logging units. Region One Criteria for Forest Development will be used as a guide for planning, location, and design of access roads. Main trunk roads which serve many uses and large areas, will be constructed with appropriated funds insofar as possible. Other necessary roads will be constructed by the timber purchaser.

(c) Program - The present sales program calls for an estimated 75 miles of system roads to be constructed and 20 miles to be reconstructed each year for the next 5 years. These roads are shown in the coordinated 5-year timber harvest access road plan. (Appendix table 33)

Road No. 218 (Forest Highway No. 50) is the main transportation artery for the Calder, Avery, and Red Ives Blocks. This is a county maintained road from St. Maries to Avery. The segments of this road from Rochat Creek to Avery and from Quartz Creek to Red Ives--a total of 66 miles--need major improvement to make them suitable for log hauling. Betterment of this road is vital to increasing utilization and small sales activity as well as safety for all users. A reconstruction project is scheduled to be advertised this year, with systematic betterment planned during the next decade, to bring this road up to a suitable standard.

One of the most significant developments in the Upper St. Joe area will be the completion of the Gold Creek road in 1961. When this road is completed, the Diamond National Corporation contemplates hauling all timber from their sales in this area to Superior, Montana. When this road is completed, it will be only 32 miles from the mouth of Gold Creek to Superior, Montana. This means that until the St. Joe River road (Forest Highway 50) is improved, it will be more economical to appraise timber from sales above Bluff Creek to St. Regis rather than St. Maries.

The expected completion of the timber purchaser road down the Little North Fork of the Clearwater River to Butte Creek within the next five years will open up one of the last big blocks of virgin timber remaining on the south end of the Avery Block.

In addition to the areas to be opened up in Eagle and Simmons Creeks, there will be considerable virgin area opened up by the proposed bridge at Prospector Creek in the Avery Block and the roads into the Hardpan, Periwinkle, and Fuzzy-Bennett areas that will be served by this bridge.

(d) Rights-of-Way - The securing of rights-of-way provides a major problem within the working circle. Ownership patterns in this working circle are indeed complex. There are long range plans to consolidate ownerships through land exchange and this should help solve some right-of-way problems. Where rights-of-way are needed, plans are now made to secure them well in advance of the sales.

Generally no timber will be moved over a road unless rights-of-way have been secured or public access is legally assured. Details of a five-year right-of-way action program for the working circle are shown in appendix table 37.

In addition to the regular right-of-way program, a big job remains to acquire interest in existing private roads to secure national forest needs. The following is a list of major roads in this category:

<u>District</u>	<u>Road Number</u>	<u>Name</u>	<u>Approx. Length</u>
Avery	288	Sisters Creek	3.0
Avery	1,259	Montana Creek	3.0
Calder	396	Boulder Creek	5.0
Clarkia	321.1	Merry Creek	8.6
Clarkia	764	Graves Creek-West Stony	17.0
Palouse	447	Palouse River	5.0
Palouse	767	N. Fk. Palouse River	4.0
Palouse	381.2	Moose Creek (Big Sand)	8.0

Besides the roads listed above, many additional miles of existing roads have questionable right-of-way status or right through use only.



## b. Planting

There has been considerable planting done on the St. Joe National Forest since 1910. Through F.Y. 1960, 37,681 acres have been planted, including 3,192 acres of replanting. Of this amount, 6,181 acres had been lost--mainly to fire and blister rust.

(1) Needs - Within the working circle, 117,700 acres of commercial forest lands are less than 10 percent stocked. Seedlings and saplings, plus pole stands that are poorly stocked (10 to 39 percent) occupy an additional 86,000 acres. The above categories represent 23 percent of the working circle's commercial forest land.

Undoubtedly, a part of the total nonstocked and poorly stocked acreage listed above will never be planted because of game use, shallow rocky soils, and natural regeneration. However, the total job necessary to put actual plantable acreages back into production will be a tremendous undertaking since it is estimated that less than 10 percent of the area can be planted without some type of site preparation to remove competing vegetation cover. (See appendix table 35 "Current Determination of Plantable Acres" and "Cutover Area Stocking.")

The following factors contribute to low productivity and stocking on the above acreage: (1) brushfields; (2) distance from seed source; (3) reburns of young growth; (4) high soil temperatures during the summer, particularly on the steep, rocky, south, and west facing slopes; (5) insufficient soil and low moisture retaining characteristics.

Many of the large clear-cut blocks that were cutover during the spruce bark beetle epidemic in the early 1950's have inadequate stocking. Much of this area is covered with brush which will have to be killed by aerial spraying or some other means before it is planted. Some rescarification may be desirable on blocks where dozers can be used.

An urgent need exists to complete planting surveys on the older nonstocked areas within the working circle. The largest block in this category lies north of the St. Joe River, from Big Creek east to and including the North Fork of the St. Joe River drainage. A definite large scale planting program needs to be set up for these large burned areas. The present planting program is inadequate and must be greatly accelerated if these burned over areas are going to be rehabilitated within a realistic period of time.

A stepped-up program of planting surveys was started during F.Y. 1959 on the Avery Block. This program is continuing and to date the compartments listed in table 7 have been extensively examined to determine plantable acres, site preparation needs and amount and species of planting stock. A more intensive examination will be necessary on individual areas prior to actual planting.



TABLE 7 - PLANTING SURVEYS DONE 1959-1961

<u>No.</u>	<u>Compartment Name</u>	<u>Acres Examined</u>	<u>Acres Plantable</u>	<u>Year Completed</u>
9	Storm-Setzer	8,550	4,280	1959
10	Hammond-Kyle			
11	Upper N. Fk. St. Joe	13,700	800	1961
14	Squaw-Big Dick	12,727	1,089	1961
15	Clear-Turkey	8,175	11	1961
16	Upper Loop Creek	2,196	None	1961
19	Copper Creek	4,446	245	1961
38	Bird Creek	6,478	None	1961
39	Turner Creek	2,452	None	1961
40	Skookum Creek	5,760	550	1961
56	Red Ives Creek	8,085	680	1961
57	Color Creek	4,760	280	1961
62	Lower Slate Creek	26,880	6,221	1960
63	Upper Slate Creek			
66	Black Prince Creek	7,000	1,200	1961
68	E. Fk. Big Creek			
TOTAL		111,209 <sup>1/</sup>	15,356	

1/ Includes intermingled areas not classified as nonstocked.

In addition to planting surveys, there is a pressing need to develop and improve road systems into many of these nonstocked compartments. With high present day labor costs it will be necessary in many cases to develop a system of work roads to serve site preparation and planting crews in order to hold down over-all costs.

Listed are four of the most important projects in this category:

<u>Road Number</u>	<u>Name</u>	<u>Type Work</u>	<u>Mileage</u>
225	Slate Creek	Betterment	18
7454	Upper Slate Creek	Construction	6.5
537	Big Creek	Construction	7
1907.1	Mud Cabin to Mastodon	Construction	9

During the early stages of logging spruce bark beetle-infested timber, spruce was sold at low rates in order to open up the country and salvage the deteriorating timber in the shortest possible time. This resulted in inadequate K-V collections in some areas, particularly on the Avery District. Subsequent sales made to relog other species have served to rehabilitate these areas to some extent. Additional P&M planting funds will be needed to bring these areas back into full production.

The poor moisture holding characteristics of the soil in much of the higher country makes it mandatory that planting be done as early in the spring as possible in order to get trees established before the sites dry out. Fall planting has not been too successful due to frost heaving or prolonged dry weather.

The merit of direct seeding as a reforestation method must be established by studies in this area. Direct seeding combined with brush eradication could accelerate the return to productivity of some areas at a faster rate than by planting.

Each year timber sale operations are increasing the acreage to be planted. Where timber harvest methods create areas needing planting costs can be paid from K-V collections except where large volumes of low-value species are involved.

(2) Policy - Planting and planting survey policies for the working circle will follow instructions found in FSH 2460. Each planting project proposed for the current year will be set up in an individual folder with a map showing location, boundary of area proposed for planting by species, areas needing ground preparation, camp locations, and other information.

Every effort will be made to fill the nursery's requests for seed to insure a steady flow of planting stock that is adapted for planting on St. Joe areas. Sufficient time will be allowed in work plans; and sufficient manpower, money and materials will be lined up well in advance for cone collection projects, especially when a good seed year occurs. Planting will be delayed until preparatory work has been completed where survival is not reasonably certain.

Access roads for planting crews and firebreaks for controlled burning for the large burned-over areas should be considered and planned for well in advance.

Nonstocked areas having primary uses other than timber production and watershed protection will be treated in accordance with policies governing such situations. Administrative decisions on a case by case basis will have to be made on winter game areas that conflict with plantation establishment. On these limited areas it will be necessary to determine the highest use, timber or wildlife, or if it is feasible to plant these areas and fence them with deer- and elk-proof fences in order to insure seedling survival.

Porcupine control will continue to be stressed wherever damage is occurring.

(3) Program - Planting objectives will be to restock the maximum acreage possible with species suitable to the site from funds currently available. In the next 4-year period, approximately 690 acres are programed for planting each year. (See appendix table 34, "4-Year Planting Plan.")

The ultimate objective will be to reduce the present backlog of poorly stocked acreage as rapidly as possible; meanwhile keeping planting current with restocking needs created by timber harvest. Time lost between timber harvest and restocking will be reduced to a minimum.

A program of scarification, brush eradication, and prescribed burning will be required to reduce acreages of poorly stocked stands. Substantial amounts of appropriated money will be needed to attain the above objectives.

c. Timber Stand Improvement

The objective of timber stand improvement work is to restore, maintain or improve productivity on commercial forest land consistent with their planned use.

(1) Needs - Within established forest types, the following practices are needed to accomplish the stated objective:

(a) White Pine (inside BRC units)

- Blister rust control
- Planting
- Cleaning and weeding
- Thinning
- Crop tree release and pruning

(b) White Pine (outside BRC units)

- Sanitation cutting
- Crop tree release

(c) Ponderosa Pine

- Seedbed preparation
- Planting
- Improvement cutting to favor ponderosa pine
- Release and pruning of crop trees
- Rodent control (porcupine)

(d) Larch--Douglas-fir

- Seedbed preparation
- Sanitation cutting to remove dwarfmistletoe
- Thinning and weeding
- Planting (Douglas-fir only)

(e) Spruce-Subalpine fir

- Seedbed preparation or planting
- Thinning overstocked sapling stands
- Brush eradication and replanting

(f) Grand fir-Hemlock-Cedar

Cull tree removal

Planting (favor cedar, white pine, spruce or Douglas-fir)

(g) Lodgepole Pine

Thinning

Seedbed preparation

Only a small portion of the work needed can be done with funds collected on commercial timber sales.

The inventory for this working circle shows 131,281 acres of well-stocked poletimber seedling and sapling stands. A large part of this total is in the larch and lodgepole pine types and is in need of thinning and liberation cuts in order to maintain satisfactory growth. Most of this work must be done with appropriated funds if it is to be accomplished.

(2) Policy - The policy will be to follow recommended practices listed in Section 2470 of the FS Manual and Handbook, and guidelines established in the R1 Planting and Stand Improvement Handbook. Region One marking guides (Supplements to Section 2440 of the FS Handbook) supplemented by local needs will be utilized.

Stand improvement plans are an integral part of each timber sale report and appraisal and will be coordinated with cutting and slash disposal plans.

Where primary values have been removed from timber sale areas by prior cutting, collections will be made where necessary over the administrative limitation in order to rehabilitate the stand.

Careful consideration will be given to stand improvement needs in determining timber sale road standards when development costs may limit the amount available for K-V.

SAB plans for timber sales will be revised currently if necessary to conform to on-the-ground conditions.

Seedbed preparation work will be programed where possible to induce natural regeneration. Planting will be provided for where possible after three to four years if this method fails.

Use of salvage sales and other administrative practices to accomplish stand improvement needs will be given high priority.

(3) Program - T.S.I. work within the working circle will be programed on the basis of actual needs and available money. Currently, most work must be done with K-V funds because of limited appropriated funds available. A large part of available K-V funds will be spent for site preparation, planting and release of residual growing



stock. (See appendix table 36)

Intensive examinations within selected compartments of relatively high productivity are currently being made to determine the character and extent of stand improvement work that is needed. Such examinations are necessary to establish priorities of work. All TSI plans for timber sales will be kept currently on form R1-2410-1 and necessary adjustments made between sales.

Appropriated funds for stand improvement will be used primarily for thinning and release of young, natural and planted stands under 40 years of age on better sites until the backlog of this type of work is completed. Stands containing a large percentage of treated white pine will be given priority in cultural work.

d. Insect Control

(1) Problem - Scattered insect activity is present throughout the mature stands in the working circle.

(a) Mountain Pine Beetle - Currently attacking small groups of white pine in the mature and overmature stands. The most serious threat is in the overmature white pine in the Floodwood and Foehls Creek drainages. Scattered attacks have also occurred in white pine stands adjacent to cutover areas in the Bluff, Turner, Bottle, and Bird Creek drainages.

(b) Douglas-fir Beetle - Has been killing small groups of mature Douglas-fir on the north side of the St. Joe River above Avery and in the stands along the St. Maries-Palouse River Divide. The attacks have generally been widely scattered and isolated making it uneconomical to attempt control by logging.

(c) Spruce Bark Beetle - Most of the heavy spruce stands in the working circle were infested during the severe epidemic of 1952-1955. Logging for control and salvage was carried on in spruce stands wherever adequate road systems were available. The isolated pure spruce stands suffered almost complete mortality. Green spruce still remain in the mixed stands. The spruce bark beetle has returned to an endemic status.

(d) Ips - Scattered attacks in the young ponderosa and lodgepole pine stands near logging and land clearing operations have been occurring along the west boundary of the working circle. These attacks have remained isolated and mostly limited to spots less than five acres in size. The infestations have not spread from the spots after the initial attack.

(e) Larch Case-bearer - The larch stands in the northwest portion of the working circle are heavily infested. The infestation is spreading rapidly in all directions from the initial attack several

years ago near St. Maries. No noticeable mortality has been observed, however, the repeated needle defoliation will no doubt result in growth loss. The only attempt at control has been the release of a parasitic wasp in the infested larch stands during the summer of 1960.

(2) Policy - Develop the transportation system in the mature and overmature stands susceptible to insect attacks to allow early harvesting of infested and high-risk trees or preferably, blocks of such material.

Accessible mature stands will be surveyed periodically for indications of insect damage. A sales program will be designed, when necessary, to promptly remove infested stems and thus effect quick control.

All foresters will keep an alert watch for evidence of insect attacks in the working circle and report the infestations promptly.

Foresters responsible for managing the cutting and removal of timber products will stress the prevention of mechanical damage to residual trees. Damaged stems will be removed, if possible.

(3) Program - The following actions will be stressed:

(a) The annual sales program will give priority to areas infested or threatened by insect attacks.

(b) Timber sale contracts will include clauses for the removal of infested and high-risk trees.

(c) Stand improvement and slash disposal projects will be planned to minimize insect problems.

(d) Insect detection training schools will be conducted periodically to help foresters recognize potential insect infestations.

(e) Direct chemical control of insect outbreaks will be programed when necessary.

(f) Maintain close scrutiny for beetle infestations in high-hazard areas, such as recent blowdowns, burned-over areas, and right-of-way clearings.

e. Disease Control

(1) White Pine Blister Rust

(a) Problem - There are 44 white pine management units presently included in the national forest and State and Private blister rust control program within the working circle. These units are located mostly in the young reproduction and pole stands near

Clarkia, Bovill, Elk River, and Emida. Total acreage involved is 88,000 of national forest and 102,000 of other ownerships. (See appendix table 30)

The spread of blister rust has been largely controlled in these units by the intensive eradication of the ribes during the past 30 years. Infection is still occurring where logging operations disturb the soil and cause new ribes growth.

Severe blister rust damage occurred in many of the white pine stands during the disease-wave years from 1933 to 1948 before control had been established. The damaged young white pine are presently being treated with the antibiotic "Acti-dione" with a basal-stem application by ground crews. The use of helicopters and fixed-wing planes to apply the antibiotic "Phytoactin" to pole-sized white pine has been tested. Over 4,000 acres of infected immature western white pine stands within the working circle have been sprayed by aircraft and some 20,000 acres have been treated by the basal stem method. Additional white pine units previously dropped from the control program may be brought into white pine management again by antibiotic treatment of the heavily damaged stands by either hand or aerial application. It is expected that several areas in the Calder, Avery, and Red Ives blocks will be brought into the program.

Blister rust damage surveys in the mature white pine stands in the Eagle, Quartz, Tumbledown, Bruin, Gold, and Simmons Creek drainages indicate that severe mortality from blister rust will occur within the next 20 years. Present plans propose the removal of the infected trees as quickly as access roads and sales programing will permit.

(b) Policy - The policy will be to protect all western white pine stands within the approved white pine management units in the working circle through ribes eradication and/or application of antibiotics. Additional white pine areas will be added to the control program. These areas will be protected to maturity by the use of antibiotics without ribes eradication other than occasional stream-type work.

(c) Program - Continue antibiotic treatment of diseased white pine within the present approved white pine management units.

Put into practice the improved antibiotic control methods recommended by the regional office branch of Forest Pest Control.

Plan for use of K-V collections to pay for all or part of BRC costs on applicable sale areas.

Extend the applications of antibiotics to areas outside the present control program where valuable young white pine stands can be economically brought through to maturity.

Develop the transportation system in mature white pine areas to allow for removal of damaged white pine before severe mortality from blister rust occurs.



Continue the search for additional valuable pine stands to include in the control program by systematically surveying white pine areas both within and outside present management units. Observe the current spread and intensification of blister rust in these stands.

## (2) Other Disease Control

### (a) Problem

Pole Blight - Scattered infection is present in the pole-sized white pine within the working circle. Mortality is occurring in the infection centers; however, spread of the disease appears to be declining. There is no known method of controlling pole blight at present. The best plan is to salvage the merchantable diseased timber before deterioration.

Dwarfmistletoe - This is present in many of the mature larch stands within the working circle. It is also found in a lesser degree in Douglas-fir. No statistical survey has been made to determine the exact spread or intensity in the working circle. Infected trees will be removed by logging and sanitation measures.

Heart Rot - Its presence is widespread in overmature stands. A sales program geared to remove the diseased and susceptible trees as promptly as possible is the recommended control procedure.

(b) Policy - Surveys will be made periodically to determine extent, intensity, and trends of the various forest diseases.

Every possible effort will be made to apply silvicultural practices to hold each disease in check.

Overmature stands infected with wood rotting diseases will receive high priority for access road and timber sale programing.

Direct control methods will be used for combating forest diseases where necessary.

(c) Program - Foresters will consider the high priority of removing diseased and susceptible timber when preparing the working circle timber sales program. Access road and timber sale plans will be geared for early access to drainages containing heavily diseased stands.

Where necessary, diseased timber will be supplemented with healthy timber to make practicable sales.

Foresters will watch continually for diseased timber stands and report serious infection centers promptly to expedite suitable control action.



f. Animal Control

Animals have had a marked influence on the composition and establishment of forest stands within the working circle.

(1) Problem - Deer and elk, as well as livestock, have damaged reproduction through trampling and browsing. Big game damage of importance has been restricted to the winter range habitat where the animals tend to group. Porcupine damage of consequence is limited to ponderosa pine pole and young sawtimber stands where many spike tops and misshapen trees bear evidence of girdling. The small forest rodents and birds consume large quantities of seed and contribute to unstocked or poorly stocked areas. Rabbits, squirrels, and rats kill reproduction by gnawing. Squirrel and gopher burrows allow air passage which excessively dries the soil and impedes establishment of reproduction.

Bears injure and kill mature thin barked trees such as cedar, white pine, grand fir, and subalpine fir by stripping the bark with their claws. Beaver are prevalent throughout the working circle. Girdled and felled trees are common along the banks of larger streams.

(2) Policy

Livestock shall be fenced out or removed from areas of commercial forest land where damage is occurring to young growth and plantations.

Artificial or natural regeneration will not be planned for known areas of big game winter range concentration without adequate fencing to protect the reproduction.

Rodent problems will be considered prior to initiation of planting or direct seeding projects and accepted control measures taken where deemed necessary.

(3) Program

Determine areas to be maintained in primary range and regulate grazing on all transitory areas so as not to damage young growth or hinder natural regeneration. This will be a part of multiple use planning.

Initiate studies to determine the safe carrying capacity of big game winter range and determine areas to be dedicated entirely to this use.

Porcupine control measures will generally be by hunting during periods of deep snow where this is practical. Use of poison blocks will be continued to supplement hunting in hard to reach areas and around known points of concentration such as buildings and den trees.

Continued use of poison will be made on rabbits and other small rodents where damage occurs to young plantations or where direct seeding projects are contemplated.

g. Fire Control

(1) Annual Losses - The average annual burned area loss for the 10-year period from 1951 through 1960 was 53 acres. In terms of nonreserved commercial forest land, this is 0.06 percent.

The year 1960 was characterized by light winter snowfall coupled with a dry early summer which produced severe fire conditions. Unseasonal rains during August provided relief from what had promised to be a disastrous fire season. Appendix table 31 provides a comparison for each of the years during this period.

(2) Objective - The forest par for the years 1960 to 1964 is to keep burned area to an average of 100 acres per year or 0.12 percent of net national-forest land. Supplemental goals will be to have not more than 14 man-caused fires; not more than one Class C, D or E fire; not more than one Class A and B extra-period fire; and not more than one Class C, D or E extra-period fire annually during the period.

(3) Policy - Policy will be to meet or exceed the standards for prevention, presuppression and suppression as established in the Forest Service Manual, Handbooks and R1 supplements, and as further defined in the R1 Fireman's Guide and in 1960 R1 Forest Fire Plans.

Timber sale contracts and all other commercial uses will provide prevention requirements and standards of equipment and manpower necessary to undertake rapid and efficient suppression action. Annual fire plans will be developed for each active timber sale in which specific action will be planned for the additional fire potential created by harvesting activities. Individual sale area slash disposal plans will, where necessary, provide for the collection of supplemental funds to furnish extra protection for areas of undisposed or partially disposed slash.

Supplemental protection will, through necessity, be practiced on many areas of cutover private lands. Physical disposal will not bring these areas within prescribed standards due to the limited amounts of money available.

(4) Slash Disposal - The Slash Disposal Plan will be an integrated part of all timber sale reports. It will provide for reducing fire hazard to a medium-medium fuel type and will be carefully checked and approved by the officer who approves the contract. On sales outside the national forest protection boundary, it will be the policy to require the purchaser to deposit co-op funds for slash disposal where this work must be integrated with sale area betterment. All slash disposal plans for sales outside the protection boundary will be discussed with the protection agency responsible for fire protection on the area prior to advertising the sale.

The dozer "bunch-and-burn method" will be utilized on clear-cut areas where slopes are under 35 percent and a mineral soil seedbed is required for natural regeneration. Broadcast burning will be used for the same purpose where topography and soil conditions limit dozer use or where excessive amounts of cull material make dozer piling impractical.

Handpiling or lopping will be limited to partial cut areas where some method of disposal is necessary to reduce slash concentrations to a medium-medium hazard.

(5) Silvicultural Use - The effective use of fire is an important forest management tool. Prescribed burning serves two practical purposes: (a) to economically reduce the fire hazard and (b) to establish favorable seedbeds and sites for natural and/or artificial regeneration. Clear-cut white pine sites within BRC units generally will be prescribed burned to destroy ribs as well as to prepare the sites for planting. Brushfields may be burned to eliminate competition prior to planting. Defective or unmerchantable stands of hemlock, grand fir, and cedar may be slashed and burned to rehabilitate the areas to productive timber growth.

#### h. Land Acquisition and Exchange

The very complex land pattern of the working circle indicates a well coordinated land acquisition and exchange program is necessary for proper multiple-use management.

There are five main private land owners in the working circle: Potlatch Forests, Inc., Northern Pacific Railway Company, Diamond National Corporation, Milwaukee Land Company, and Bunker Hill Company.

In addition, the Bureau of Land Management has about 40,000 acres of Public Domain land widely dispersed within the working circle. Also, the State of Idaho owns substantial acreage within this area.

Negotiations are underway to acquire all of Bunker Hill land on the working circle in exchange for national-forest land on the Coeur d'Alene National Forest. Other proposed exchanges are: two with Potlatch Forests, Inc., one with Milwaukee Land Company and two with smaller land owners.

Land exchange with all owners will be carried to completion according to the land exchange plan.

It is necessary that a total of 350 rights-of-way easements be acquired within the next five years. This includes cost-share agreements with Northern Pacific Railway Company in the Avery and Red Ives Blocks, and with Potlatch Forests and Diamond National in the Clarkia and Palouse Blocks. Negotiations for these cost-share agreements are now underway. (See appendix table 37.)



## 9. COOPERATION

### a. Other Federal Agencies

Coordinate action and planning under this plan with the ACP, SCS, U.S. Fish and Wildlife Service, U.S. Geological Survey, and any other agencies which may have active programs within the working circle.

Work closely with the BPR on matters relating to Forest Highway No. 50 to speed survey and reconstruction of this important road.

Meet periodically with representatives of the SBA to determine needs and procedures for possible set-aside sales.

### b. State Agencies

Coordinate with the State Forestry Department on problems relating to slash disposal and fire protection on private lands as well as the State & Private ERC program.

Work closely with the Idaho Fish & Game Department on matters relating to big game and fisheries habitat as affected by road location and logging methods. Coordinate efforts to keep big game herds in balance with available food supplies.

### c. Private Owners

(1) Forest Industry - Owners in this category are Potlatch Forest, Inc., Diamond National Corporation, Milwaukee Land Company, and Northern Pacific Railway Company. Their combined ownership of commercial forest land within the working circle is approximately 380,000 acres or 21 percent of the total. Coordination with them is necessary in developing a suitable transportation system in the form of cost-sharing and road-use agreements where lands are intermingled. Also, programs of mutual interest, such as insect and disease control projects and slash disposal, will need to be coordinated.

(2) Small Private - Small private holdings within the working circle total approximately 22 percent or 400,000 acres. These holdings include much of the land in better sites and generally are in poor condition from the standpoint of quality growing stock. A big job of coordination through the Idaho State Forester's office is necessary to improve these stands by use of the ACP and other State-Federal forestry programs. Well signed demonstration areas will be installed on national-forest land to publicize good forest management techniques and encourage better management on these private lands.



d. Private Organizations

Cooperate with local chambers of commerce wherever possible in support of access road programs and in sustaining local industry.

Keep local sportsmen's groups informed as to Forest Service programs and activities. Assist these groups in obtaining sound factual information on which to base their recommendations for fish and wildlife habitat improvements.

Inform other local civic groups of plans and projects affecting their activities.

APPENDIX

ST. JOE WORKING CIRCLE

TIMBER MANAGEMENT PLAN



## INVENTORY TECHNIQUE AND ACCURACY

Data for the inventory of this plan are based on instructions issued by Region One in 1955 and 1956 and on "Field Instructions for Forest Inventory" prepared by the Intermountain Forest & Range Experiment Station. In brief, the following is the technique used:

1. Delineation of forest condition classes by type, size class and stocking on aerial photographs. The oldest photographs were flown in 1955 and the newest in September 1958.
2. On-the-ground checking of these classifications.
3. Transfer of strata classification from photographs to 2-inch-to-a-mile planimetric maps.
4. Calculation of acreages by type areas and ownership for compartments, blocks, and total working circle.
5. Sampling each important strata (5,000 acres or more) to establish standards. Many of the sample plot locations were obtained through a cooperative agreement with the Division of Forest Survey of the Intermountain Forest & Range Experiment Station. All sampling work was done during the field seasons of 1959-1960.
6. Computation and application of average volumes per acre to acreages of ownership in each compartment, block, and for the total working circle. An IBM machine was used to facilitate computations.
7. Testing the statistical accuracy of the data.

The working circle was divided into two sampling units (St. Joe River and Clarkia-Palouse) to better utilize the time available and to increase sampling accuracy by separating the two distinctly different areas within the working circle.

## RELIABILITY OF THE DATA

There are two sources of error in determining the acreages and volumes of the various cover types and strata recognized. These are as follows:

1. Technique Errors - those made in measuring, recording and compiling the data. Continuous checking and thorough training of the individuals involved keeps these errors at a minimum.
2. Sampling Errors express reliability of the estimate which in this case is the inventory. These errors are expressed as a percent of the total population and can be minimized by proper procedures. However, they are present any time the sample measured is less than the total population. The sampling for this plan was of such intensity that the error of estimate was held to +8 percent two times out of three.



Sampling errors for individual types varied from 14 to 18 percent. The total sampling error for the working circle is estimated to be +120,844 cubic feet (8 percent of total inventory) two times out of three.

Highlights of the coefficient of variation and the sampling error based on cubic foot volumes of trees 5" and larger for the various strata of the working circle are as follows:

<u>Strata</u>	<u>Coefficient of Variation (percent)</u>	<u>Sampling Error Percent (1 SD)</u>
D9M	47	15
D9P	110	45
D8W	12	6
D8M	46	23
Total D		17
W9W	63	18
W9M	70	18
W9P	58	24
W8M	44	10
Total W		14
LP8W	87	31
LP8M	54	19
Total LP		18
GF9W	43	14
GF9M	70	21
GF9P	83	42
Total GF		17
L9M	55	14
L9P	42	21
L8M	69	23
Total L		14
Total All		8

Tabular Check Calculation of Allowable Annual Cuts  
from Final Harvest Cuttings  
on Nonreserved Commercial National Forest Lands

Appendix Table 26

St. Joe working Circle

Allowable Annual Cut for All Types 95 Million Bd.Ft.  
Average Rotation 126 Years.

Current Age Class	Ave. cutting age	Comm. Forest area	Periodic and Mean annual increment	Net Vol. Per Acre at Ave. cutting Age	Total volume to cut	Years to cut		Area Cut per Year
						Each Age Class	Cumulative	
Years	years	Acres	Board Feet		MM bd. ft.	Years	Years	Acres
200+		42,348	PAI 1/214	Res-12,840	Res-543.7	6	6	7,050
	187			Gr- 642	Gr- 9.1			
180-200	186-188	16,754	214	Res-12,840	Res-215.1	2	8	8,350
	170			Gr- 1,498	Gr- 25.1			
161-180	169-170	9,012	214	Res-12,840	Res-115.7	1	9	9,010
	153			Gr-1,926	Gr- 17.3			
141-160	150-156	38,251	214	Res-12,840	Res-491.1	6	15	6,380
	139			Gr-2,568	Gr- 98.2			
121-140	136-142	34,778	214	Res-12,840	Res-446.5	6	21	5,800
	130			Gr-3,852	Gr-134.0			
101-120	122-138	78,358	214	Res-12,840	Res-1006.1	16	37	4,950
	124			Gr-6,206	Gr-486.3			
81-100	118-131	56,737	214	Res-12,840	Res-728.5	13	50	4,360
	120			Gr-9,416	Gr-534.2			
61-80	111-130	92,001	214	Res-8,000	Res-736.0	19	69	4,840
	130			Gr-12,240	Gr-1126.0			
41-60	110-149	172,886	MAI 2/200	Res-3,900	Res-674.0	39	108	4,440
	146			Gr-17,600	Gr-3043.0			
21-40	129-164	126,021	200	Res-1,670	Res-210.0	35	144	3,600
	149			Gr-25,000	Gr-3150.0			
1-20	145-154	30,251	200	Res-0	Res-0	8	152	3,780
	145			Gr-25,000	Gr-756.0			
Restock	142-147	20,000	200	Res-0	Res-0	5	157	4,000
TOTAL		717,397						

1/ PAI for sawtimber portion only.

2/ MAI for 70% stocking.



Indicated Allowable Annual Cuts from Intermediate Cuttings  
on Nonreserved Commercial National Forest Lands

Appendix Table 27

St. Joe working circle

Area to Cut Annually

Well Stocked Stands	Commercial Forest Area	Portion under Rotation Age	Area Subject to Intermediate Cut	Area That May be Cut Annually
Sawtimber	Acres	Percent	Acres	acres
D9W	3,626	78	2,828	141
W9W	10,826	52	5,630	281
GF9W	10,680	83	8,864	443
AF9W	274	100	274	14
S9W	165	68	112	6
MH9W	1,002	68	682	34
H-C9W	1,232	66	814	41
L9W	2,080	84	1,746	87
Poletbr.				
D8W	10,782	100	10,782	539
P8W	269	100	269	13
W8W	21,549	100	21,549	1,077
Lp8W	53,139	93	49,420	2,471
GF8W	653	100	653	33
AF8W	2,399	100	2,399	120
S8W	444	100	444	22
MH8W	1,176	100	1,176	59
H-C8W	109	100	109	5
L8W	33,395	100	33,395	1,670
TOTAL	153,800			7,056

1/ Assumed cutting cycle-20 years

Volumes per Acre Available from Cutting Area

Well Stocked Stands	Volume per Acre		Recommended Cut 2/ percent	Volume of Cut per Acre		
	Sawtimber	Other		Sawtimber	Other products	
Sawtimber	M bd.ft.	cu.ft.		M bd.ft.	cu.ft.	cords 3/
D9W	13.0	500	25	3.2	125	1.4
W9W	28.4	460	25	7.1	115	1.3
GF9W	17.5	540	25	4.4	135	1.5
AF9W	8.1	520	25	2.0	130	1.4
S9W	8.5	650	25	2.1	162	1.8
MH9W	11.0	400	25	2.7	100	1.1
H-C9W	14.7	900	25	3.7	225	2.5
L9W	23.0	960	25	5.7	240	2.7
Poletbr.						
D8W	3.7	700	25	.9	175	1.9
P8W	2.9	1,030	25	.7	257	2.8
W8W	1.4	700	25	.3	175	1.9
Lp8W	1.5	820	25	.4	205	2.3
GF8W	4.4	1,930	25	1.1	482	5.4
AF8W	.8	580	25	.2	145	1.6
S8W	1.5	1,490	25	.4	372	4.1
MH8W	.5	850	25	.1	212	2.3
H-C8W	3.2	900	25	.8	225	2.5
L8W	1.0	750	25	.2	187	2.1

2/ Percentage of cut believed most appropriate for fully stocked stands.

3/ 90 cubic feet= 1 cord



Appendix Table 27 (cont.)

Well Stocked Stands	Annual Cut from Intermediate Cuttings			
	Area to Cut Annually	Volumes to Cut Annually		
		Sawtimber	Other Products	
Sawtimber	Acres	M bd. ft.	M cu. ft.	M cords
D9W	141	448	17.5	.2
W9W	281	1,995	32.3	.4
GF9W	443	1,949	59.8	.7
AF9W	14	28	1.8	--
S9W	6	13	1.0	--
MH9W	34	91	3.4	--
H-C9 W	41	152	9.2	.1
L9W	87	496	20.9	.2
Subtotal	1,047	5,172	145.9	1.6
D8W	539	485	94.3	1.0
P8W	13	9	3.3	--
W8W	1,077	323	188.5	2.0
Lp8W	2,471	988	506.5	5.7
GF8W	33	36	15.9	.2
AF8W	120	24	17.4	.2
S8W	22	9	8.1	.1
MH8W	59	6	12.5	.1
H-C8W	5	4	1.1	
L8W	1,670	334	312.3	3.5
Subtotal	6,009	2,218	1159.9	12.8
TOTAL	7,056	7,390	1305.8	14.4

St. Joe Working Circle  
Red Ives District

In millions of board feet

[illegible]



St. Joe Working Circle  
Avery District

In millions of board feet

[illegible]



St. Joe Working Circle  
Calder District

Appendix Table 32  
(Continued)[illegible]

St. Joe Working Circle  
Clarkia District

Compartment No. (1)	Name of sale (2)	Last half		FY 1961		FY 1962		FY 1963		FY 1964		FY 1965		FY 1966	
		Sell (3)	Cut (4)	Sell (5)	Cut (6)	Sell (7)	Cut (8)	Sell (9)	Cut (10)	Sell (11)	Cut (12)	Sell (13)	Cut (14)		
	Under \$300	.5	.2	.5	.8										
130	\$300 to \$2,000	1.2	.8	2.0	2.4	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
137	Hidden Creek	.5			.5										
116	Windy Creek	1.0			.3			.7							
221	Ramskull Creek	4.0			1.0			3.0							
223	Stocking Meadows	6.0			1.0			3.0							
130	Glover Creek #1 (Section 23)	8.5			2.0			3.0							
112	Beaver Creek #2			1.5	.5			1.0							
126	Little Carpenter Creek			1.5	.5			1.0							
121	Upper Olson Creek			2.0	.5			1.0							
119	Penfro Creek			2.5	.5			1.0							
225	Roehls			2.5	.5			1.5							
133	Anthony Peak			3.0											
130	Bechtel #1					4.0									
224-226	Isabella Divide					8.0									
127	Emerald Divide														
134	West Fk. Merry Creek									1.5					
224	Stony Creek									3.0					
137	Windy Peak									6.0					
130	Bechtel #2														
223	Glover Creek #2 (Section 25)														
130	Bechtel #3														
218-219	Floodwood Creek (Sections 26 and 27)														
	TOTALS	21.7	1.0	15.5	10.5	14.5	17.7	13.0	15.5	16.0	13.0	17.5	15.0		Cont'd

Cont'd

St. Joe Working Circle  
Palouse District

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Cont'd.

The following from the original have not been reproduced:

Supporting Data

Appendix tables 1 - 25 inclusive

" " 28 - 31 "

" " 33 - 38 "

Map showing 5-Year Timber Sale and Access Road Program

" " Compartments

" " Land Use

" " Planting

" " Log Flow

" " Blister Rust Control

" " Sample Plot Locations







